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10/562,543	12/28/2005	Thomas Andreas Maria Kevenaar	NL030858	6017

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POGMORE, TRAVIS D	
ART UNIT	PAPER NUMBER
2436	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/562,543	KEVENAAR, THOMAS ANDREAS MARIA	
	Examiner	Art Unit	
	Travis Pogmore	2436	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on *19 November 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-9 and 12-14* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-9 and 12-14* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *28 December 2005* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. This action is in response to the request for reconsideration filed November 19, 2008.

2. Claims 1-9 and 12-14 are currently pending. Claims 1-9 are currently amended, claims 12-14 are new and claims 10 and 11 have been cancelled.

3. Applicant's arguments, with regards to claims 1 and 7-9, filed November 19, 2008 have been fully considered but they are not persuasive.

Examiner Notes

4. Examiner cites particular columns and line numbers in the references as applied to the claims below for the convenience of the applicant. Although the specified citations are representative of the teachings in the art and are applied to the specific limitations within the individual claim, other passages and figures may apply as well. It is respectfully requested that, in preparing responses, the applicant fully consider the references in entirety as potentially teaching all or part of the claimed invention, as well as the context of the passage as taught by the prior art or disclosed by the examiner.

5. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claim Rejections – 35 USC § 112

6. Applicant's arguments, see page 10, and respective amendments filed 19 November 2008, with respect to the indefiniteness of claim 5 has been fully considered and are persuasive. The rejection of claim 5 has been withdrawn.

Claim Rejections – 35 USC § 101

7. As claim 11 has been canceled, the rejection thereof has been withdrawn.

Claim Rejections – 35 USC § 102

8. Claim 8 is rejected under 35 U.S.C. 102(b) as being anticipated by WIPO Publication No. WO-2000/062503 A2 (hereinafter "Hardjono").

Hardjono teaches a router device (page 5, lines 9-10) being arranged to route a communication fragment from a sender device towards a receiver device, the communication fragment comprising a target group address referring to at least two receiver devices (page 5, lines 10-13), the router device comprising:

receiving means being arranged to receive the communication fragment comprising a cryptographic message integrity code that is at least partly based on the target group address (page 5, lines 10—13 and 16-18 and page 7, line 13 to page 8, line 7, the processing hardware and software recited on line 11 relies on the identification tags (as indicated on page 3, lines 17-22 and comprising the base/child encryption key which incorporates the multicast ID number (i.e. target group address)) to authenticate the messages, so these must be a part of the received and transmitted messages),

modifying means being arranged to modify the communication fragment, by replacing the target group address by a reference referring to one of the at least two receiver devices, while maintaining the original cryptographic message integrity code without use of a cryptographic key related to the cryptographic message integrity code (page 8, line 29 through page 9, line 2, the router ID number of the receiving router being appended to the message/base tag combination), and

transmitting means being arranged to transmit the modified communication fragment to the one of the at least one two receiver devices (page 9, lines 7-9, routers in Hardjono act as routers, senders and receivers), but does not specifically teach wherein the cryptographic message integrity code is at least partly based on the target group address.

Claim Rejections – 35 USC § 103

9. Claims 1-3, 5-6, 9, 12, and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hardjono in view of European Patent Application Pub. No. EP 1032178 A1 (hereinafter "Chen et al.").

As to claim 1, Hardjono teaches a method of communicating a communication fragment, the communication fragment comprising a first target group address referring to at least two receiver devices (Fig.1 and Fig. 2, e.g. transmitting to a multicast group as depicted in Fig. 1), the method comprising acts of:

a sender device adding a cryptographic message integrity code to protect at least part of the communication fragment, wherein the cryptographic message integrity code

is at least partly based on the target group address (Fig. 2, element 204 and page 7, line 13 to page 8, line 7, the tag (i.e. the cryptographic message integrity code) comprising the base/child encryption key which incorporates the multicast ID number (i.e. target group address)),

the sender device transmitting the protected communication fragment to a router device (Fig. 2, element 206),

Hardjono does not specifically teach the router device, for at least one receiver device in the target group address, replacing the first target group address with an address of the at least one receiver device forming a modified protected communication fragment, while maintaining the unchanged cryptograph message integrity code, and subsequently forwarding the modified protected communication fragment to the at least one receiver device,

the at least one receiver device receiving the modified protected communication fragment,

the at least one receiver device restoring the original protected communication fragment by replacing the address of the at least one receiver device with the target group address to allow verification of the protected communication fragment using the message integrity code.

However, Chen et al. teaches the router device, for at least one receiver device in the target group address, replacing the first target group address with an address of the at least one receiver device forming a modified protected communication fragment, while maintaining the unchanged cryptograph message integrity code, and

subsequently forwarding the modified protected communication fragment to the at least one receiver device (column 10, lines 7-21 and column 11, line 58 through column 12, line 12, the home agent acts as the router device and suggests that it may be necessary to amend any error checking while not mandating that the home agent does so, and the foreign agent acts as a receiver device),

the at least one receiver device receiving the modified protected communication fragment (column 12, lines 2-12),

the at least one receiver device restoring the original protected communication fragment by replacing the address of the at least one receiver device with the target group address to allow verification of the protected communication fragment using the message integrity code (column 12, lines 2-12, the home address being equivalent to the group address).

Therefore, it would have been obvious to a person having ordinary skill in the art at the time the invention was made to modify the teaching of Hardjono to include the router device directly modifying the target address reference and the receiver device restoring the original protected communication of Chen et al. because this would avoid longer communication fragments normally needed (Chen et al., column 3, lines 25-34).

As to claim 2, Hardjono and Chen et al. do not specifically teach wherein the first communication fragment comprises a bit field IA to indicate whether indirect addressing is used.

However, the concept and advantages of using a bit field to indicate whether an indirect address is being used is well known and expected in the art. For example U.S. Patent App. Pub. US 2003/0223402 A1 (page 2, paragraph 30, multicast by its nature uses indirect addressing).

Therefore it would have been obvious to a person having ordinary skill in the art at the time of the invention was made to modify the teaching of Hardjono and Chen et al. to use a single bit to indicate whether or not indirect addressing was being used.

As to claim 3, Hardjono teaches wherein the sender device and the at least one receiver device share a common cryptographic key, and where the cryptographic message integrity code is computable and verifiable only by using the common cryptographic key (page 6, lines 12-13 and 19-20), but does not specifically teach wherein the common cryptographic key is not shared with the router.

However, wherein the common cryptographic key is not shared with the router is well known and expected in the art (e.g. US Patent Application Pub. No. US 20020078353 A1 (hereinafter "Sandhu"), page 1, paragraph 12 and page 2, paragraph 18, the (possibility of the) presence of an eavesdropper (i.e. the router) being the basis for the use of asymmetric cryptography to avoid the problem of (insecure) symmetric key distribution). Thereby official notice is taken.

Therefore, it would have been obvious to a person having ordinary skill in the art at the time the invention was made to modify Hardjono to use a key unknown by any of the routers since this is well known and expected in the art and allows for the use of an

existing multicast framework (as in Hardjono) to be used for secure communications of different types, e.g. unicast or a different multicast group.

As to claim 5, Hardjono and Chen et al. teach wherein the at least one receiver device restores the protected communication fragment by replacing the address of the at least one receiver device with each of a plurality of group identities (Chen et al., column 12, lines 4-12) that include the sender device to determine which of the plurality of group identities the message integrity code matches (Hardjono, page 3, lines 17-22).

As to claim 6, Chen et al. teaches wherein

the router device, wherein the act of replacing the first target group address reference, comprises an act of storing the first target address reference in the modified protected communication fragment (column 11, lines 48-57), and

the at least one receiver device restores the protected communication fragment using the stored first target address reference in the modified protected communication fragment in order to allow verification of the message integrity code (column 12, lines 2-12, the restored mobile nodes home address returns the communication fragment/IP packet to it's original state which is what's required for MIC verification).

As to claim 9, Hardjono teaches verification means being arranged to verify the cryptographic message integrity code (page 3, lines 13-20, the authenticator reading and authenticating the tags to determine message origin applies equally to MICs),

wherein a target address is a target group address referring to at least two receiver devices (Fig.1 and Fig. 2, e.g. transmitting to a multicast group as depicted in Fig. 1), and

wherein the cryptographic message integrity code is at least partly based on the target address (page 7, line 13 to page 8, line 7, the generated tag (i.e. the cryptographic message integrity code) comprising the base/child encryption key which incorporates the multicast ID number (i.e. target address)).

Hardjono does not specifically teach a receiver device being arranged to receive a modified communication fragment originating from a transmitter device through a router device, the modified communication fragment being derived from a communication fragment comprising a target address, the receiver device comprising:

receiving means being arranged to receive the modified communication fragment, and

restoring means being arranged to restore the original communication fragment that was used to compute the cryptographic message integrity code included in the modified communication fragment that by replacing an address of the receiver device with the target address.

However, Chen et al. teaches a receiver device being arranged to receive a modified communication fragment originating from a transmitter device through a router device, the modified communication fragment being derived from a communication fragment comprising a target address (column 10, lines 7-21, a care-of address for a

single node is a group of at least one receiver device, this is also standard practice for multicast in general), the receiver device comprising:

receiving means being arranged to receive the modified communication fragment (column 12, lines 2-4), and

restoring means being arranged to restore the original communication fragment that was used to compute the cryptographic message integrity code included in the modified communication fragment that by replacing an address of the receiver device with the target address (column 12, lines 4-8).

Therefore, it would have been obvious to a person having ordinary skill in the art at the time the invention was made to modify the teaching of Hardjono to include the receiver device as in Chen et al. being arranged to receive communication fragments and the means to restore them to their original state used to compute the MIC as in Hardjono, because this would allow care-of and multicast addressing to still utilize an original MIC.

As to claim 12, Hardjono teaches wherein the transmitter device and the receiver device share a common cryptographic key, and where the cryptographic message integrity code is computable and verifiable only by using the common cryptographic key (page 6, lines 12-13 and 19-20), but does not specifically teach wherein the common cryptographic key is not shared with the router.

However, wherein the common cryptographic key is not shared with the router is well known and expected in the art (e.g. US Patent Application Pub. No. US

20020078353 A1 (hereinafter "Sandhu"), page 1, paragraph 12 and page 2, paragraph 18, the (possibility of the) presence of an eavesdropper (i.e. the router) being the basis for the use of asymmetric cryptography to avoid the problem of (insecure) symmetric key distribution). Thereby official notice is taken.

Therefore, it would have been obvious to a person having ordinary skill in the art at the time the invention was made to modify Hardjono to use a key unknown by any of the routers since this is well known and expected in the art and allows for the use of an existing multicast framework (as in Hardjono) to be used for secure communications of different types, e.g. unicast or a different multicast group.

As to claim 14, Hardjono and Chen et al. teach wherein the receiver device is arranged to restore the communication fragment by replacing the address of the receiver device with each of a plurality of group identities (Chen et al., column 12, lines 4-12) that include the transmitter device to determine which of the plurality of group identities the cryptographic message integrity code matches (Hardjono, page 3, lines 17-22).

10. Claims 4 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hardjono in view of Chen et al. and further in view of Sandhu.

As to claim 4, Hardjono and Chen et al. do not specifically teach wherein the common cryptographic key is used to encrypt the message content.

However, Sandhu teaches wherein the common cryptographic key is used to encrypt the message content (page 1, paragraphs 9-10).

Therefore, it would have been obvious to a person having ordinary skill in the art at the time the invention was made to modify the teaching of Hardjono in view of Chen et al. to use the common cryptographic key to encrypt the message content of Sandhu, because this would avoid the need to generate, distribute, and store multiple common cryptographic keys to allow both message integrity verification and message encryption.

As to claim 13, Hardjono and Chen et al. do not specifically teach wherein the common cryptographic key is used to encrypt the message content.

However, Sandhu teaches wherein the common cryptographic key is used to encrypt the message content (page 1, paragraphs 9-10).

Therefore, it would have been obvious to a person having ordinary skill in the art at the time the invention was made to modify the teaching of Hardjono in view of Chen et al. to use the common cryptographic key to encrypt the message content of Sandhu, because this would avoid the need to generate, distribute, and store multiple common cryptographic keys to allow both message integrity verification and message encryption.

11. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hardjono.

Hardjono teaches a sender device (page 3, lines 13-17, the “network device”) being arranged to transmit a communication fragment through a router device towards a receiver device, the communication fragment comprising a target group address

referring to at least two receiver devices (page 3, lines 20-22 and 25-27, the nature of multicasts is such that they include group addresses), the sender device comprising:

protecting means being arranged to add a cryptographic message integrity code to protect at least part of the communication fragment, wherein the cryptographic message integrity code is at least partly based on the target group address and a cryptographic key (page 3, lines 15-17 and page 7, line 13 to page 8, line 7, the generated tag (i.e. the cryptographic message integrity code) comprising the base/child encryption key which incorporates the multicast ID number (i.e. target group address)), and

transmitting means being arranged to transmit the communication fragment to a receiver device through a router device that is not able to modify the cryptographic message integrity code (page 8, line 29 through page 9, line 2, routers in Hardjono act as routers, senders and receivers and in the embodiment described merely append tags/MICs instead of changing them), but does not specifically teach where the router device does not have access to the cryptographic key.

However, where the router device does not have access to the cryptographic key is well known and expected in the art (e.g. Sandhu, page 1, paragraph 12 and page 2, paragraph 18, the (possibility of the) presence of an eavesdropper (i.e. the router) being the basis for the use of asymmetric cryptography to avoid the problem of (insecure) symmetric key distribution). Thereby official notice is taken.

Therefore, it would have been obvious to a person having ordinary skill in the art at the time the invention was made to modify Hardjono to use a key unknown by any of

the routers since this is well known and expected in the art and allows for the use of an existing multicast framework (as in Hardjono) to be used for secure communications of different types, e.g. unicast or a different multicast group.

Response to Arguments

12. Applicant's arguments, with regards to claims 1 and 7-9, filed November 19, 2008 have been fully considered but they are not persuasive.

13. On pages 10-14 of the Applicant's Response, Applicant argues that Hardjono alone or in view of any combination of Chen and Sandhu fails to disclose the amended independent claims.

14. The Examiner respectfully disagrees with Applicant's arguments, because absent specific arguments with regards to any perceived differences of claim interpretation or, likewise, any perceived failings of the originally cited art beyond merely underlining large portions of the above mentioned claims, the Argument provides no basis for rebuttal or agreement beyond the claim limitations themselves which are addressed in the rejections above. The cited portions of the references and the reasoning behind the rejections of the particular claims has been developed further in the appropriate rejections above where it has been deemed helpful and modified or added to where made necessary per Applicant's amendments.

15. Therefore, in view of the above reasons, Examiner maintains rejections.

Conclusion

16. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Travis Pogmore whose telephone number is (571)270-7313. The examiner can normally be reached on Monday through Thursday between 8:30 a.m. and 4:00 p.m. eastern time.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas Pham can be reached on 571-272-3689. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/T. P./
Examiner, Art Unit 2436

/Nasser G Moazzami/
Supervisory Patent Examiner, Art Unit 2436